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10/501,094

07/09/2004

Kouji Yoshikawa

0020-5273PUS1

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07/19/2006

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EXAMINER

OH, TAYLOR V

ART UNIT

PAPER NUMBER

1625

DATE MAILED: 07/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/501,094

Applicant(s)

YOSHIKAWA, KOUJI

Examiner

Taylor Victor Oh

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1625

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 February 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 7/04&2/06.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

The Status of Claims

Claims 1-6 are pending.

Claims 1-6 has been rejected.

DETAILED ACTION

1. Claims 1-8 are under consideration in this Office Action.

Priority

2. It is noted that this application is a 371 of PCT/JP02/13576 on 12/26/02, which has a foreign priority document ,Japan 2002-003177, filed on 01/10/2002.

Drawings

3. None.

Claim Objections

Claims 1-6 are objected to because of the following informalities:

In claims 1-6, the chemical term "a 3,3-dimethyl-2-formylcyclopropanecarboxylic acid compound (derivative) " is second time recited. The use of an article "a" in the second expression of the chemical name is improper.

Appropriate grammatical correction is required.

Claim Rejections - 35 USC § 112

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The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In Claim 1, the term "substituted" is recited. This expression is vague and indefinite. In the absence of the specific moieties intended to effectuate modification by the "substitution" or attachment to the chemical core claimed, the term "substituted" renders the claims in which it appears indefinite in all occurrences wherein applicants fails to articulate by chemical name, structural formula or sufficiently distinct functional language, the particular moieties applicants regards as those which will facilitate substitution, requisite to identifying the composition of matter claimed. Therefore, an appropriate correction is required.

In Claims 1-6, the term "derivative" is recited. This expression is vague and indefinite because, according to the dictionary, it means that "a compound derived or obtained from known or hypothetical substances and containing essential elements of the parent substance." Furthermore, the specification does not elaborate what is meant by the term "derivative". Therefore, an appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

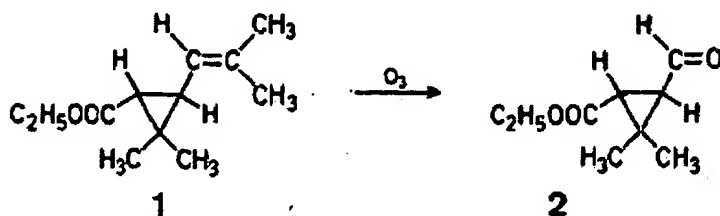
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taylor (Synthesis, 7, p.554-555; 1980) in view of Yang et al (J. Org. Chem. 2001, 66, 4814-4818).

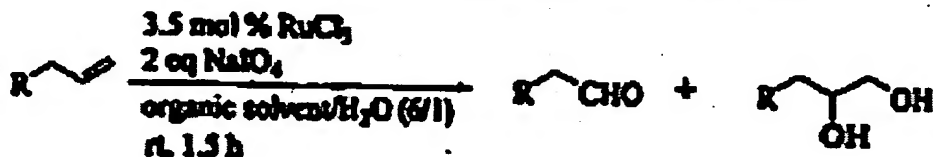
Taylor teaches the preparation of ethyl 3,3-dimethyl-2-formylcyclopropanecarboxylate in the following step (see page 554, lines 8-10) :



However, the instant invention differs from the prior art in that the claimed reaction is conducted in the presence of a ruthenium and a periodic acid; the amount of periodic compound used is 2 to 3 moles per mole of the 3,3-dimethyl-2-formylcyclopropanecarboxylic acid derivative.

Yang et al teaches a generic method for converting olefins to aldehydes by ruthenium catalyzed oxidation in the following steps (see p.4817, table 4):

Table 4. Results for Oxidative Cleavage of Monosubstituted Aliphatic Olefins^a



Furthermore, Yang et al also has indicated the following catalyst information below(see p.4814, lines 6-16):

ruthenium trichloride—sodium periodate oxidation in the $\text{CCl}_4\text{—CH}_3\text{CN—H}_2\text{O}$ (2:2:3) solvent system reported by Sharpless et al. has been widely used.³ To obtain aldehydes from olefins that are not fully substituted, ozonization of olefins followed by a reductive workup⁴ and oxidative cleavage with osmium tetroxide—sodium periodate (Lemieux—Johnson reagent)⁵ are the two most frequently employed procedures. For the sake of safety and convenience, a great deal of efforts have been directed at developing alternative methods to cleave olefins to aldehydes,^{6,7} especially in a catalytic manner.^{8,9}

Taylor expressly teaches the preparation of ethyl 3,3-dimethyl-2-formylcyclopropanecarboxylate from ethyl 3,3-dimethyl-2-(2-methyl-1-propenyl)cyclopropanecarboxylate by means of ozonization of the olefin; similarly, Yang et al teaches a generic method for converting olefins to aldehydes by another ruthenium catalyzed oxidation. Furthermore, Yang et al has offered guidance that both, the ozonization of the olefin and the ruthenium catalyzed oxidation, can be applied for the preparation of the aldehyde from the olefin as shown in the Yang et al (see p.4814, lines 6-16). From this teaching, there is a teaching of equivalence between them. Moreover, for the sake of safety and convenience, Yang et al has suggested that the application of ruthenium catalyzed oxidation to the process of converting olefins to aldehydes can be preferred. Therefore, it would have been obvious to the skilled artisan in the art to be motivated to prefer Yang's et al ruthenium catalyzed oxidation to the ozonization of the olefin in the Taylor process. This is because the skilled artisan in

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the art would expect such a modification to be successful , safe and convenient as shown in the Yang et al (see p.4814, lines 6-16).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Taylor Victor Oh whose telephone number is 571-272-0689. The examiner can normally be reached on 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas McKenzie can be reached on 571-272-0670. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Taylor Victor Oh
9/14/06